

What is the difference between a brushless fan and a regular fan?

Motors that are brushless are considered more efficient than brushed DC-motors. This means for the same input power, a brushless motor will convert more electrical power into mechanical power than a brushed motor.

Brushed motors have short lifetimes due to the wear of the brushes and commutators. Typically brushes will need to be replaced at some point.

Brushless motors do not use commutation parts so they do not suffer from this.

There are other differences but simply said, Brushless motors offer other advantages over brushed DC-motors, including higher reliability, longer lifetime and overall better performance.

What is the difference between 300 Watt and 500 Watt fans?

Wattage is a measure of power, Higher wattage means more power. More power usually means a more robust performance. Therefore in most circumstances a 500 watt fan will perform better than a 300 watt fan.

What is the CFM?

CFM stands for cubic feet per minute. It is a measurement that describes the volume of air, measured in cubic feet, a fan moves in one minute. The larger the number, the more air it can move.

Do I need a relay?

No you do not need a relay. The Spal Brushless fan has a soft start feature that eliminates voltage surge or spikes at start up. This eliminates the need of a relay.

When I energize my fan it jumps slightly, but nothing happens, so I quickly disconnected it.

This is a self protection feature of the fan called the park phase. The fan will check to see if the blade is locked or unable to turn. Leave the fan connected and the fan should start up in about 3-5 seconds.

I hooked up the fan to 12 volts but nothing happens.

The Spal Brushless fan operates on PWM technology. Simply hooking up to 12 volts will not operate the fan. The fan needs a PWM signal to operate.

What is PWM?

Pulse Width Modulation (PWM) is a technique used to control analog devices, using a digital signal. Imagine you have a ceiling fan in your home but without any speed controller. Turn it on and it'll gradually achieve max speed, or you can turn it off. Now, if I ask you to run the fan at 50% of its max speed. Is it possible without a speed controller? . The answer is yes. The fan will not instantly achieve the max speed the moment we turn it on and neither will it immediately come to a halt as we turn it off. Now imagine if you could turn on the switch, wait until you see that the fan has achieved 50% of the speed, and turn off the switch. Switch it on again as it starts to slow down and again turn it off at 50 %. If you could do this say about a 100 times a second the fan would run at 50% continuously. There's a little more to it but that's the basics of PWM.

So what is needed to provide a PWM signal to the fan?

You will need to install the Spal temperature sensor SBL-TS-195P. You can also use an after market ECU that provides a -PWM output.

Can I use my Holley EFI system to control my Spal Brushless fans?

Yes , The HP, Terminator and Dominator EFI have a -PWM output. The Sniper does not.

What is the frequency I use on my programmer?

A frequency of 128hz will work just fine.

How do I hook it up?

We provide a wiring diagram with the wiring kit. You can also find the wiring diagram on our web site. https://wizardcooling.com/product_images/uploaded_images/brushless-fan-wiring.png

What fuse do I use?

300 watt fans require a 40amp maxi Fuse w/holder. 500 watt fans require a 50amp maxi fuse w/ holder. You will need to purchase them at any auto parts store.

I hooked everything up like the wiring diagram shows, but my fans will not start. What do I do?

This situation almost always exists due to improper wiring or bad wire splices or connections. We cannot stress enough the importance of making your wire splices correctly. It is recommended to solder all splices and use shrink tubing. Butt connectors or tube connectors are not recommended.

It is recommended that the 10 gauge red and black be connected directly to the battery posts.

The brushless fan/sensor communication requires clean/dedicated power and ground connections to function correctly. When connections for power/ground for the fan and sensor are connected with other electrical devices it is possible for problems to arise. As the other devices turn on/off in the vehicle it can cause issues with the sensor's ability to communicate properly with the fan. This issue can arise from sharing a power source point with other electrical devices, and it can arise from sharing a ground with other electrical devices.

Connecting these power leads to secondary power sources such as the starter terminal or to some chassis grounding point can often create inadequate electrical connections, leading to failure. Especially the ground wire. Also double check your +12 v power connections and make sure you test with a voltmeter for +12 v.

Are there different temperature sensor ranges?

Yes. We offer 4 different Spal temperature sensors. Each has a different range as follows:

SBL-TS-165P Minimum "on" speed at 140°F // Increasing to 100% "full speed" at 165°F

SBL-TS-185P Minimum "on" speed at 165°F // Increasing to 100% "full speed" at 185°F

SBL-TS-195P Minimum "on" speed at 175°F // Increasing to 100% "full speed" at 195°F

SBL-TS-215P Minimum "on" speed at 190°F // Increasing to 100% "full speed" at 215°F

My temperature gauge reads 225 degrees, but my fans don't come on, what do I do?

Again troubleshoot all electrical wiring and connections. Another possible issue can be the location of the temperature sensors for both the fans and the temperature gauge. The optimal location for the fan temperature sensor is somewhere near the output of the water pump. (After the thermostat opens up.) It is also recommended to install the temperature sensor for your gauge in or near the same location if possible. If either of the temp sensors are located in different locations, say one in the cylinder head and one in the intake manifold, this can cause false readings in one or both temp sensors. Also make sure you install the Spal temperature sensor with the correct temperature range matching your thermostat. If you have a 180°F thermostat installed then you would use the 185° Spal temperature sensor.

Can I have my air conditioning turn on my fans?

Yes, the blue wire in the SBL-TS-Harn is a fan override wire. If you connect the blue wire into the trinary switch, the fans will turn on and run at full speed when the a/c is turned on..

Can I just have an ON/Off function?

Yes, the blue wire in the SBL-TS-Harn is a fan override wire. You can connect it to an override switch, connected to +12VDC. When the switch is turned on the fans will run at full speed. This only works when you have the ignition in the on position, if you wired the fans as shown in the wiring diagram.

Can I have the fans turn on and run full speed without using the temp sensor?

Yes. You can eliminate the use of the Spal temperature sensor and command the fan to directly run.

Using only the Yazaki pigtail connector, connect the white wire to a toggle switch mounted under the dash and connect the other side of the switch directly to ground.

Connect the yellow wire of the Yazaki pigtail connector to a switched +12v source.

The fan will soft start and ramp up to full speed whenever you flip the switch under your dash.

From the fan directly or the Yazaki pigtail connector. the fan has 4 wires:

Red = Battery Positive terminal, +12V. 10 gauge wire

Black = Battery Negative terminal. 10 gauge wire

White = Toggle switch under the dash. Switching to ground will activate the fan.

Yellow = Ignition/key switched +12V source.